

Outdoor Air Quality - Thresholds

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Office of Air & Radiation
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Science Topic Workshop on Indicators

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EPA Definitions

- ◆ **Threshold:** The lowest dose of a chemical at which a specified measurable effect is observed and below which it is not observed.
- ◆ **Threshold:** The dose or exposure level below which a significant adverse effect is not expected.

EPA Definitions

- ◆ **Threshold Level:** Time-weighted average pollutant concentration values, exposure beyond which is likely to adversely affect human health.

NAAQS

- ◆ CAA directs EPA to identify and set National Ambient Air Quality Standards for pollutants that cause adverse effects to public health and the environment.
- ◆ EPA has set standards for 6 common air pollutants – O_3 , CO, Pb, NO_2 , SO_2 , and PM.

NAAQS

Two types of standards:

- ◆ *Primary standards* set limits to protect public health, including the health of "sensitive" populations such as asthmatics, children, and the elderly
- ◆ *Secondary standards* set limits to protect public welfare, including protection against decreased visibility, damage to animals, crops, vegetation, and buildings.

NAAQS

- ◆ Standards are set to provide an adequate margin of safety, including the health of "sensitive" populations such as asthmatics, children, and the elderly.
- ◆ EPA is required by CAA to review the standards at least every 5 years to determine whether revisions to the standards are necessary to continue to protect public health and the environment.
- ◆ Such a review is a lengthy undertaking.

How NAAQS are Set

- ◆ ORD develops a “Criteria Document” that summarizes the state of scientific knowledge for a pollutant and its health and welfare effects.
- ◆ OAQPS prepares a “Staff Paper” that interprets the science and identifies the critical elements staff believe should be considered in setting/revising the standard. i.e., uncertainties, etc.

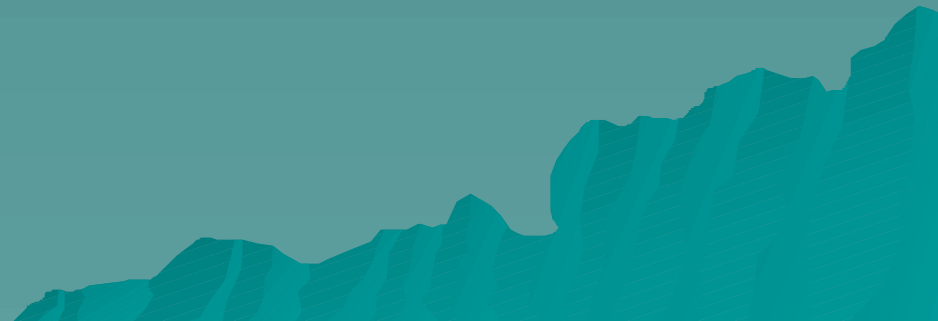
How NAAQS are Set

- ◆ Before either the criteria document or staff paper can be used as the basis for any policy decisions, they undergo rigorous review by the scientific community, industry, public interest groups, the general public and CASAC.
- ◆ Based on the scientific assessments in the criteria document and on the information and recommendations in the staff paper, the EPA Administrator determines whether it is appropriate to propose revisions to the standards.

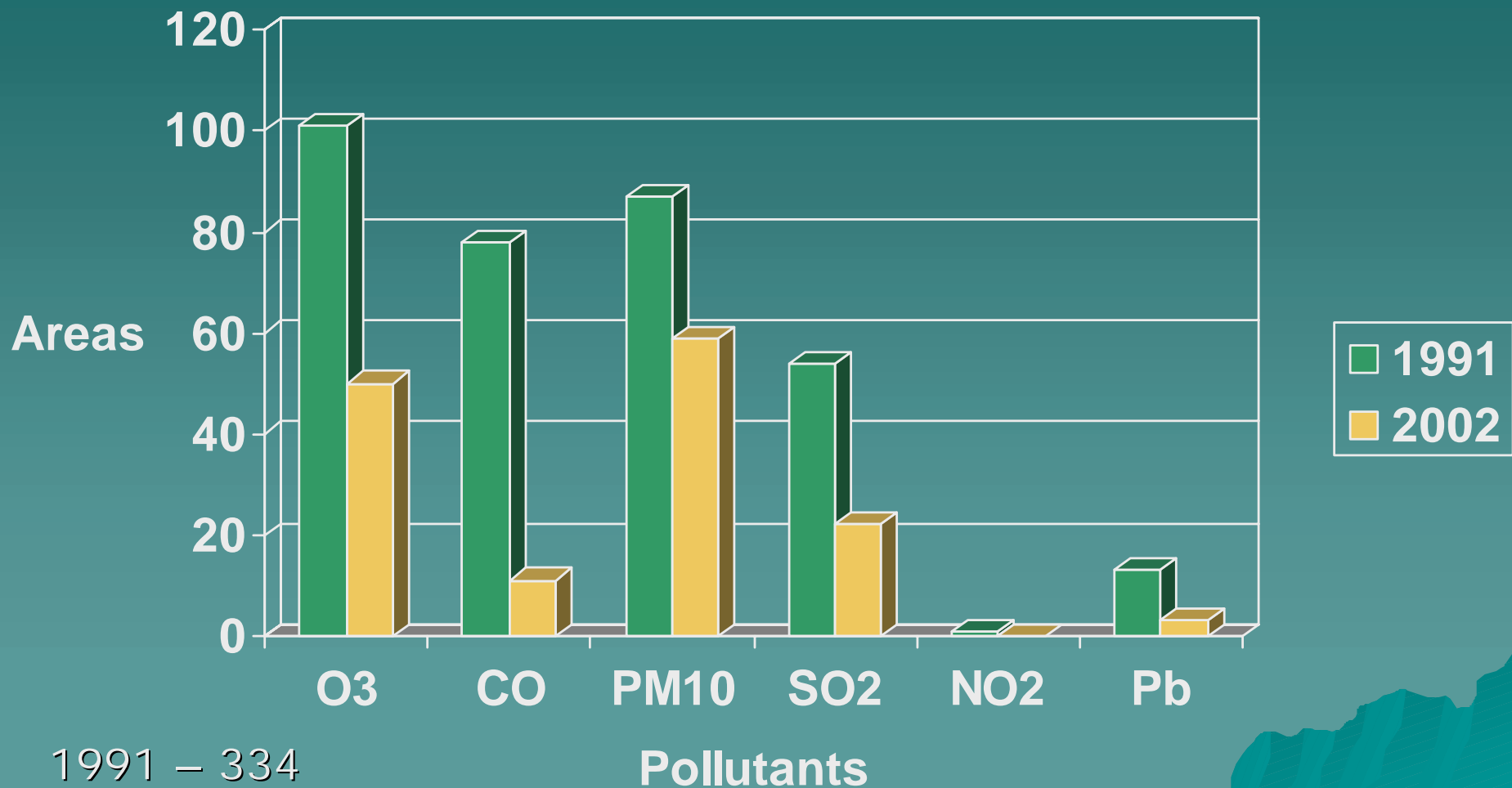
8-hour Ozone NAAQS

- ◆ Criteria for O₃: The 8-hour O₃ standard is met when the average of the annual 4th-highest daily maximum 8-hour average O₃ concentration is less than or equal to 0.08 ppm. (See handout for full explanation.)

How are Thresholds Used to Measure Progress



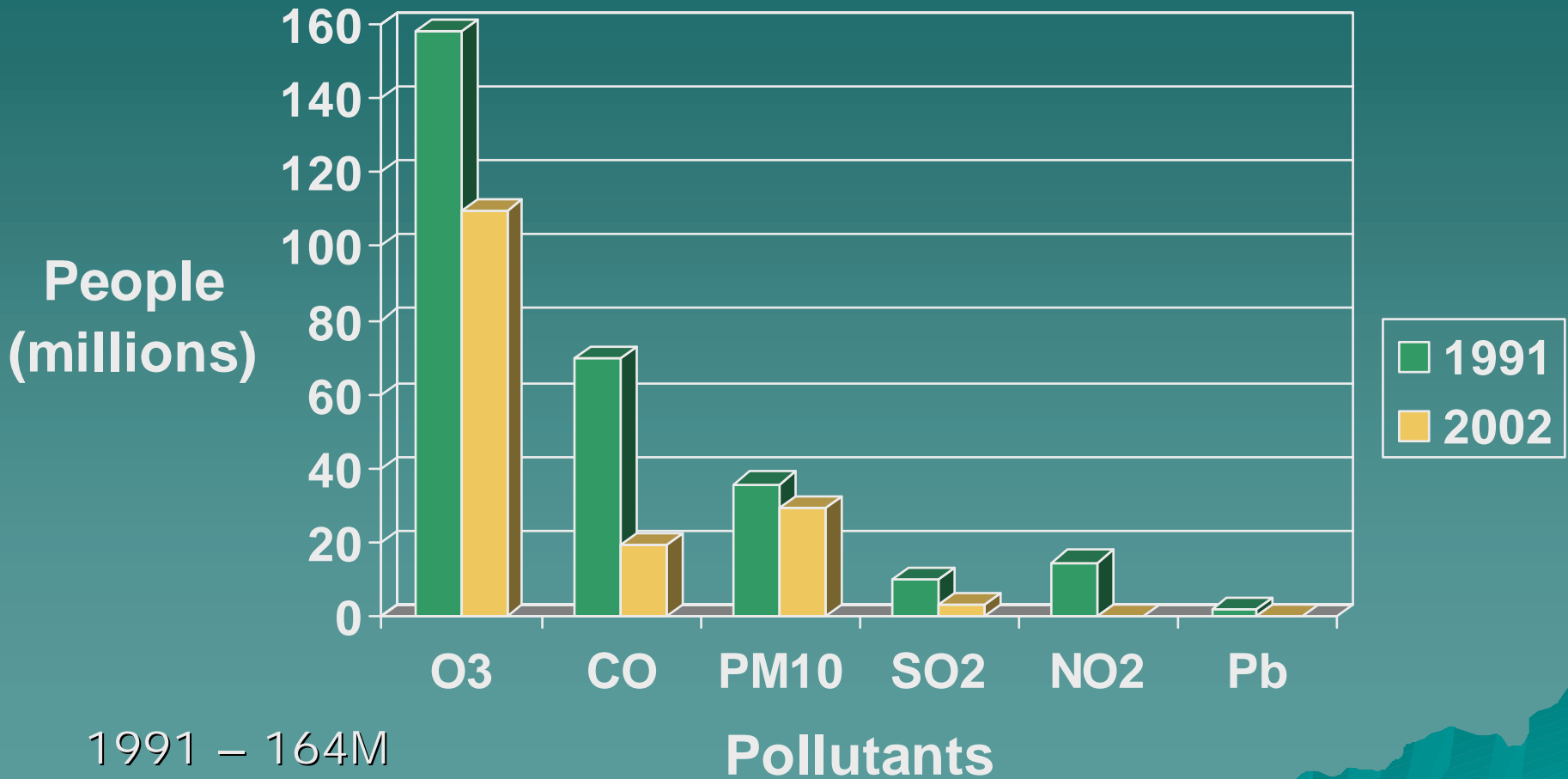
Nonattainment Areas



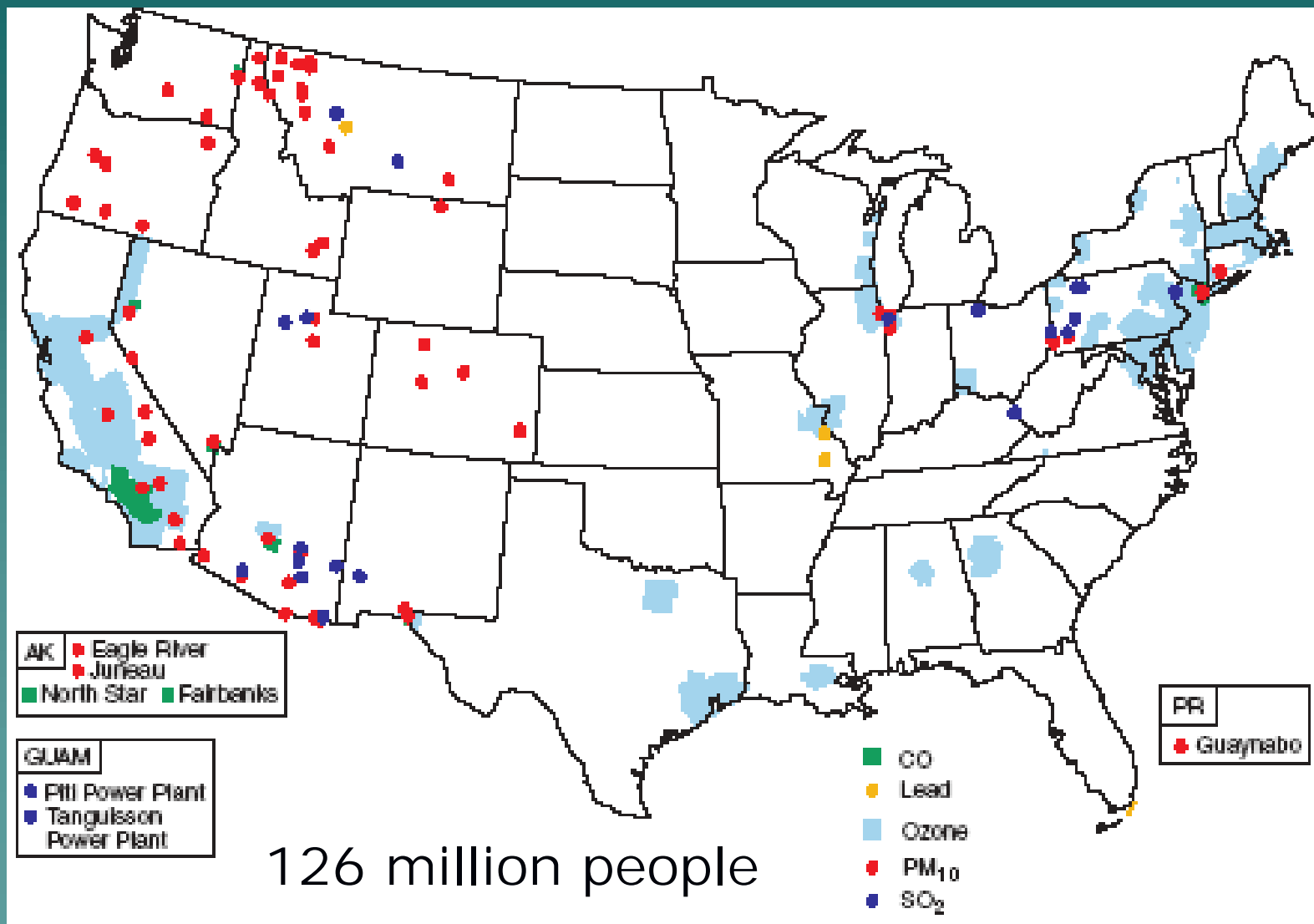
1991 – 334

2002 – 145

Nonattainment Populations

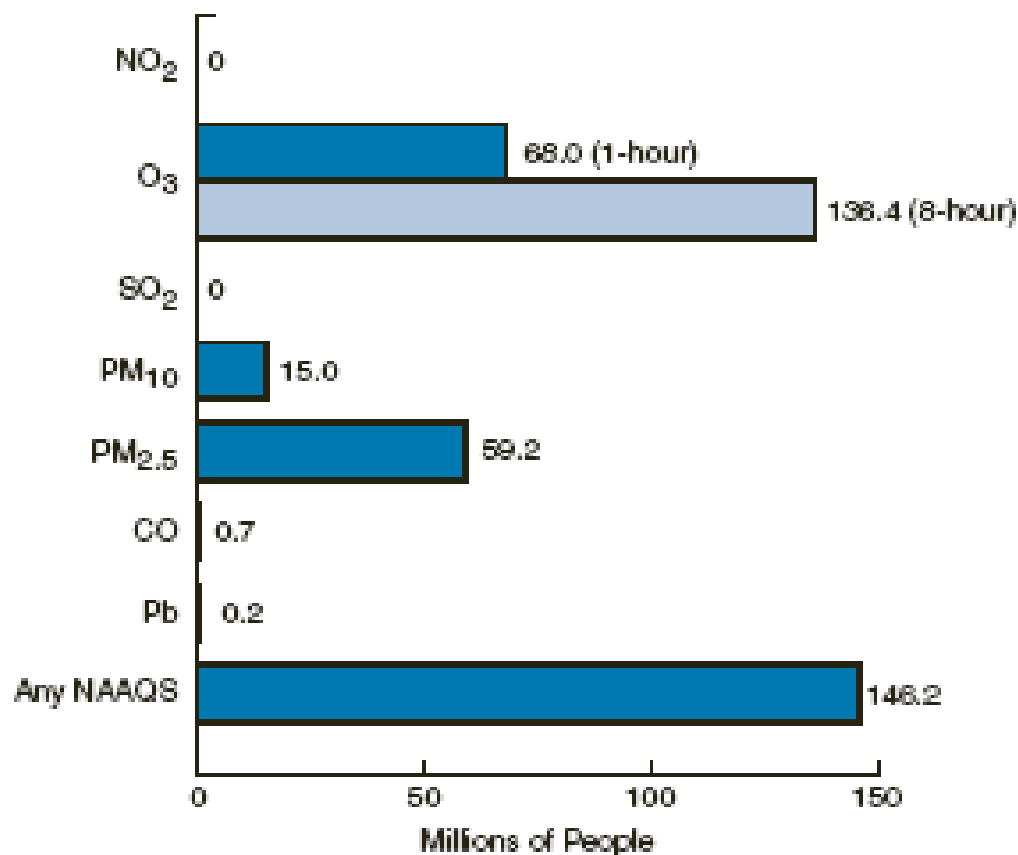


Sep 2002 Nonattainment Areas

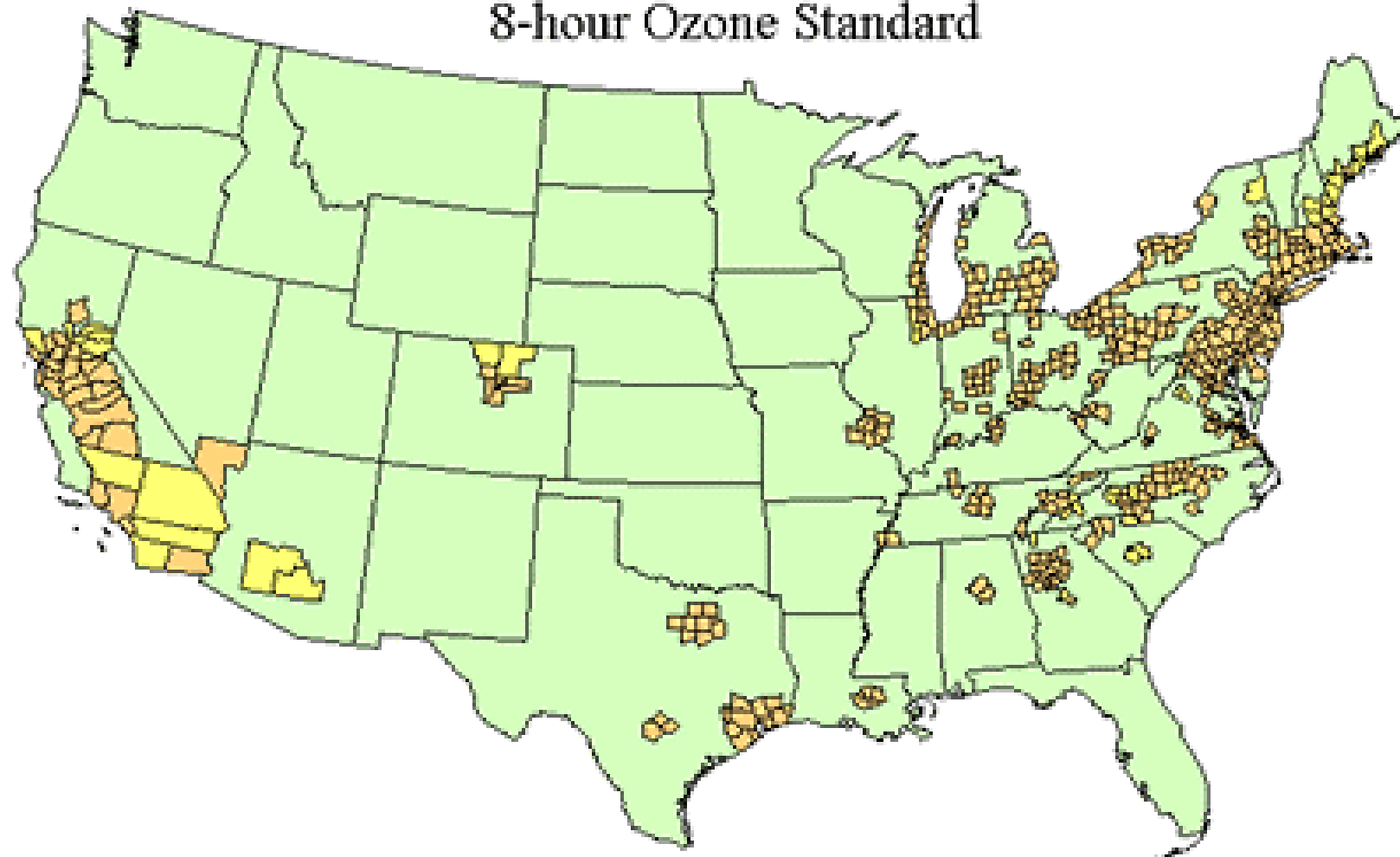


Population Affected

Number of People Living in Counties
with Air Quality Concentrations above
the Level of the NAAQS in 2002




Attainment and Nonattainment Areas in the U.S. 8-hour Ozone Standard



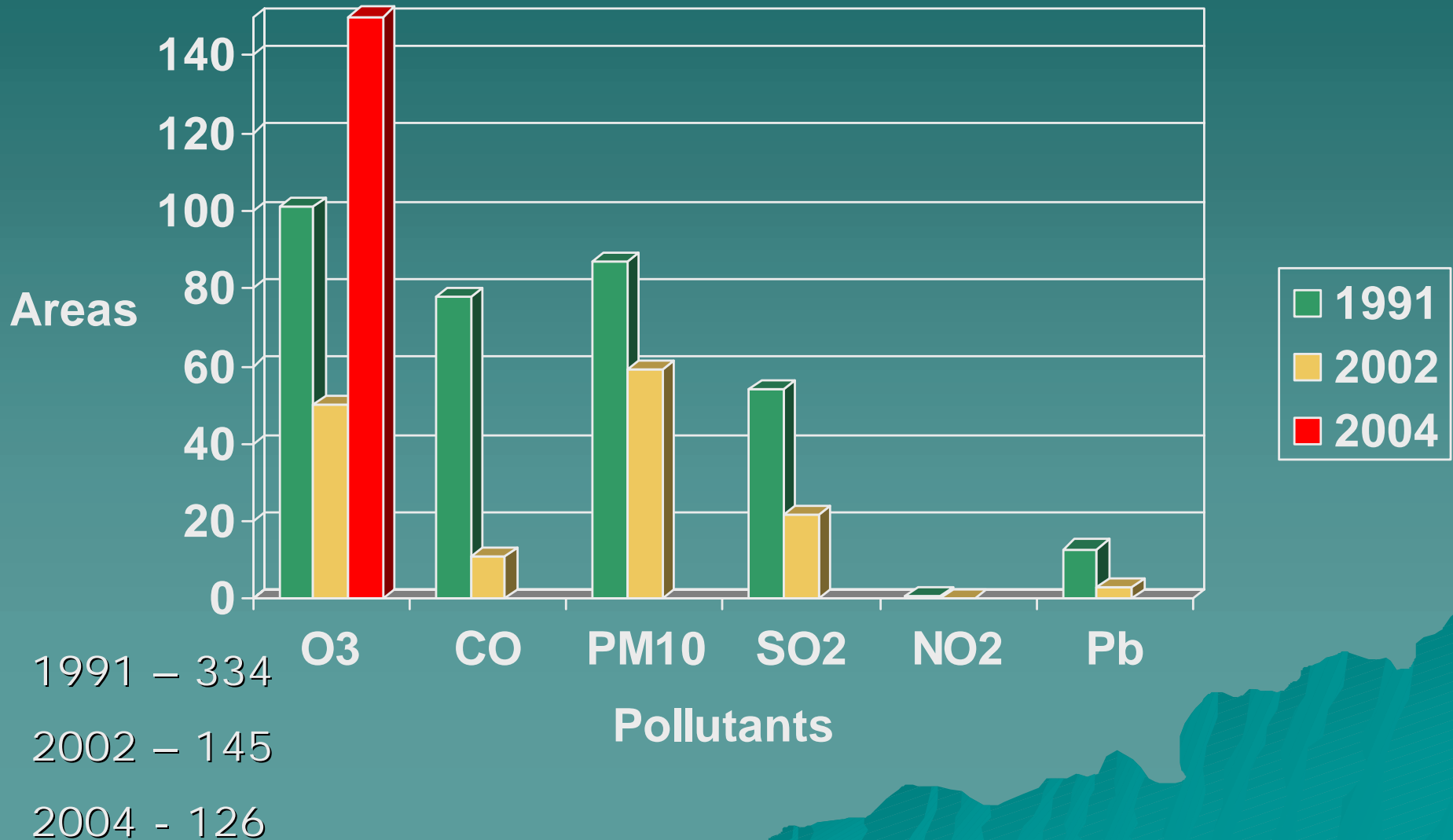
- Attainment (or Unclassifiable) Areas (2668 counties)
- Nonattainment Areas (432 entire counties)
- Nonattainment Areas (42 partial counties)

159 million

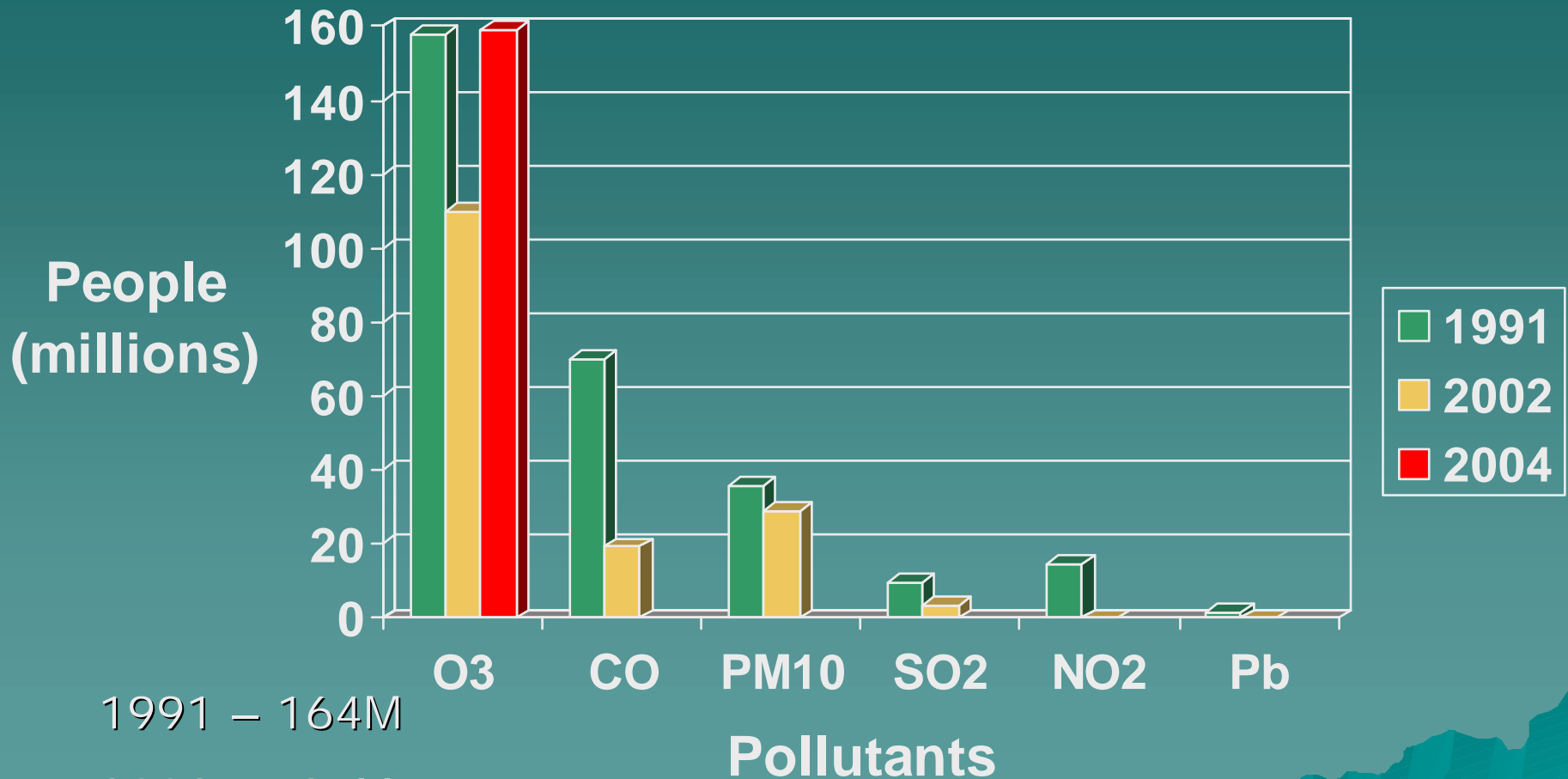
Complexities with Measuring Progress

- ◆ Nonattainment areas with poor air
 - ◆ Nonattainment areas with clean air
 - ◆ Areas clean in 1991 but not now
 - ◆ 126 million in nonattainment areas in 2002
 - ◆ 146 million with unhealthy air in 2002 (1 year)
 - ◆ thresholds change
- 
- A stylized, layered mountain range graphic in shades of teal and blue, located in the bottom right corner of the slide.

Nonattainment Areas



Nonattainment Populations




1991 – 164M

2002 – 126M

2004 – 159M

Benefit of New “Threshold”

The new standard will prevent approximately 1 million incidences per year of significant decreases in children's lung function that can limit a healthy child's activity or increase medical treatment for children.

A stylized, dark teal silhouette of a mountain range is located in the bottom right corner of the slide, partially overlapping the text area.

Additional Info on Air Quality

*Latest Findings on National Air
Quality: 2002 Status and Trends*
August 2003

<http://www.epa.gov/airtrends/>

